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Davies

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(54) **OBJECT-BASED GEOGRAPHIC INFORMATION SYSTEM (GIS)**

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This patent is subject to a terminal disclaimer.

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(57) **ABSTRACT**

The present invention is a GIS system in which topological information is classified as geometrical objects and uses a region identifier and a geometry attribute to reconstruct each topological feature. The present invention starts from the geometrical objects representing topological features. Each geometrical object has an entry including a region identifier attribute and a geometry attribute defining the geometry of a complete representation of the feature. These geometrical objects are complete in that an entry of the object attribute includes a record for a geometry attribute defining the complete geometry of a complete representation of a topological feature. These complete geometrical objects need not inherit attributes from other objects. The objects are classified as either a polygon object, polyline object, point object or raster object and stored in a respective object-based database. Using this data structure, a topological region can be displayed in real time by accessing this object-based data structure and loading the data structure associated with the topological region into a buffer. The geometrical objects associated with the topological region are then fetched from the buffer and loaded into a virtual blackboard. The fetched geometrical objects are then drawn on a display in real time.

32 Claims, 21 Drawing Sheets